

**REMARKS**

The present response is responsive to the Examiner's concerns noted in the Office Action.

**Summary of the Response**

Claims 27, 32-34, 38 and 51 have been amended. Claim 31 has been canceled. Claims 27-30 and 32-52 remain pending in this application. Reexamination and reconsideration of the present application as amended are respectfully requested.

**Summary of the Invention**

The present invention is directed to a light coupling structure on a light guide plate in a backlight module, which is structured to work with a two-dimensional (i.e., planar) array of point light sources at one planar surface of the light guide plate, such as those used in an LCD display. This particular type of light guide is distinguished from the edge-lit type of light guide, for which a linear light source is provided at the edge of the light guide plate. Edge-lit type light guide is designed for use to reduce the overall thickness of the backlight module, because there are no light sources provided on the planar side of the backlight module. However, the two-dimensional planar area of point light sources provide relatively brighter and more even distribution of light for the backlight module, as compared to an edge-lit backlight module in which light has to make its way from the side light source, to be distributed across the top light emitting planar surface. In order to improve even distribution of light over the planar output surface of an edge-lit light guide plate, it is designed to reflect and scatter light from the planar

surfaces in the viewing path of the illuminated object. As such, the design considerations of an edge-lit light guide plate are different from the design considerations of a backlit in many respects.

The light coupling structure comprises a two-dimensional array of protruding or convex structures that extend from a planar surface of the light guide plate, wherein each convex structure is aligned with a point light source (i.e., a two dimensional array of point light sources). The protrusion or convex structure has a recess within the convex structure, which recess is directly facing a point light source, so as to receive at least a portion of the point light source. The point light source is juxtaposed to the distal end portion of the convex structure. Light emitted from the point light source is substantially received by the recess and through the convex structure. The convex structures having the recess more effectively diffuse the light from the point light source into the light guide plate, to achieve a more uniform light distribution across the entire light emitting surface of the light guide plate. This backlight structure facilitates guiding of light from the light source to the light into (not from) the light guide plate, to be emitted from the light emitting surface.

In the context of an LCD device, the backlight device of the present invention is deployed to illuminate an LCD panel. The LCD panel is positioned relative to the light emitting surface of the backlight device, wherein the light emitting surface on the other side of the surface on which the convex structures are present to couple input light from the point light sources.

Claim Rejections Under 35 USC 102(b)

Claims 27-30, 40-44, 49, 51 and 52 are rejected under 35 U.S.C. 102(b) as being anticipated by Nagai et al., (Nagai), US Publication No. 2002/0135553. This rejection is respectfully traversed.

Independent claims 27 and 51 have been amended to incorporate the limitation of previously presented claim 31. Claims 27 and 51 as amended recite a recess in each convex structure or protrusion. Nagai does not teach such a structure. The Examiner conceded to such deficiency in Nagai, as previously presented claim 31 has not been rejected as being anticipated by Nagai in the present action.

Claims 27 and 51, and all the claims dependent therefrom, are therefore not anticipated by Nagai.

Claim Rejections Under 35 USC 103(a)

Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai in view of Harbers et al. (Harbers), US Publication No. 2005/0073495. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai in view of Yu et al., US Pat. No. 7,081,933. Claims 46 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai in view of Nishio et al. (Nishio), US Pat. No. 5,598,280. Claim 48 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai in view of Beeson et al. (Beeson), US Pat. No. 5,396,350. Claims 45 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai. Claims 27, 36, 40, 51 and 52 are further rejected, and claims 31-35 and 43 are rejected as being unpatentable over Harbers in view of Beeson and Kitamura. Japanese Laid-Open Patent Application No.

2004-047297. Claim 38 is rejected over Harbers, Beeson, and Kitamura, as applied to claim 31 above, and further in view of Koike et al. (Koike), US Pat. No. 5,528,709. These rejections are respectfully traversed.

a. All Claims Are Not Rendered Obvious by Nagai + Harbers

On the outset, Applicant notes that previously claim 31 had not been rejected as being obvious over Nagai in view of Harbers, or in view of any additional references. As noted above, the limitation of previously presented claim 31 has been incorporated in independent claim 1 (and similarly in claim 51). Consequently, even if Harbers can somehow be combined with Nagai, such combination would not render obvious claim 27 (and claim 51) as amended, and all claims dependent therefrom. All currently pending claims would not be rendered obvious by Nagai in view of Harbers, or in view of any other references.

b. Claim 31 (now Claim 27 as amended) Not Rendered Obvious by Harbers + Beeson + Kitamura

The Examiner conceded that Harbers fails to disclose a two dimensional array of convex structures. The Examiner further conceded that the combination of Harbers and Beeson fails to teach the convex structure to be aligned with the point light sources. The Examiner then turned to Kitamura for the missing teaching.

Applicant respectfully submits that there is no teaching, suggestion, motivation, or any apparent reason to combine Harbers and Beeson in the first place. Beeson (like some of the references earlier cited by the Examiner and overcome by Applicant in the pre-Appeal process) is not directed to a light guide structure for a two-dimensional array of point light sources.

Beeson is directed to an edge-lit backlight module in which light has to make its way from the side light source, to be distributed across the top light emitting surface. The design consideration of such edge-lit light guide module is very different to a backlight light guide. The light source in Beeson is not on the planar side (versus the edges) of the light guide plate. The light entering the edge of the light guide is projected onto the liquid crystal panel via reflections from the undersurface of the light guide.

Further, it is noted that Beeson does not disclose convex structures aligned with point light sources. The "convex structures" in Beeson relied by the Examiners are prisms provided on the light emitting side of the edge-lit light guide 6, instead of a light input surface of the light guide 6.

There is therefore no teaching, suggestion, motivation or apparent reason which can be gleaned from Harbers and Beeson, or any other references for that matter, to modify the rear-lit light guide in Harbers to have convex protrusions in Beeson, to have prisms to guide an array of point light sources.

Kitamura does not make up for the deficiencies of Harbers and Beeson. Kitamura does not show a convex structure having a recess facing each point light source. Kitamura uses light guide blocks 11 that have a through-holes 12 extending through the entire length of the guide blocks. Such through-holes can not be deemed to be a "recess", in the context of the present invention as supported by the specification.

Further, the LEDs in the Kitamura structure are not "facing" such through-holes 11, as the LEDs are completely located within the through-holes 11, as construed in the context of the present invention. It is not reasonable to say that a structure that is completely located within a hole is facing such hole, or vice versa. Previously presented claim 31 (now claim 27, as

amended) requires the recess to directly face each point light source. Claims 32 and 34 further require that the point light source is not entirely received in the recess, or a portion of the point light source remains outside the recess of the convex structure. Kitamura clearly does not disclose such structure.

Applicant respectfully submits that the Examiner erred by construing the claims out of context of the specification. As noted in the Pre-Appeal process, to properly construe the terms of a claim, reference must be first made to the intrinsic evidence (i.e., the patent specification, the prosecution history, and the claims in the patent, and when appropriate, to extrinsic evidence that may assist in determining the proper construction. (*See, Markman*, 52 F.3d at 979-981; Extrinsic evidence consists of all evidence that is external to the patent and file history, including ... dictionaries....) Terms in the claims are given their ordinary meaning unless it is established that the inventor disclosed a different meaning. (*See, Mendenhall v. Cedarapids, Inc.*, 5 F.3d 1557, 1578 (Fed. Cir. 1993), *cert. denied*, 114 S. Ct. 1540 (1994).) An inventor may be his own lexicographer by giving special meaning to terms used in the patent claims. Such an inventor-defined term, however, must be described in the patent specification. (*See, Markman, supra.*) Claims must be read in view of the specification, which is "highly relevant to the claim construction analysis" because it contains a written description of the invention that must be clear and complete enough to enable those of ordinary skill in the art to make and use it. "Usually, [the specification] is dispositive; it is the single best guide to the meaning of disputed term." (*See, Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996).) The specification also acts as a restriction on claim scope in that a claim cannot be construed to have a broader scope than supportable by the written description. (*See, Scimed Life Systems, Inc. v. Advanced Cardiovascular Systems, Inc.*, 242 F.3d 1337, 1341 (Fed. Cir. 2001); *Gentry Gallery*,

*Inc. v. Berkline Corp.*, 134 F.3d 1473, 1480 (Fed. Cir. 1998); “[C]laims may be no broader than the supporting disclosure, and therefore . . . a narrow disclosure will limit claim breadth.”)

Further, the Federal Circuit has recently affirmed the basic principles of claim construction, including the extent to which the court should resort to and rely on a patent’s specification in seeking to ascertain the proper scope of its claims. (*See, Phillips v. AWH Corp.*, 415 F.3d 1303, 1315 (Fed. Cir. 2005).) Importantly, a person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification. The Federal Circuit recognized that it and the Supreme Court have long emphasized the importance of the specification in claim construction. Therefore, the Federal Circuit held, it is entirely appropriate for a court, when conducting claim construction, to rely heavily on the written description for guidance as to the meaning of the claims.

Following the authorities set forth by the courts, Applicant is entitled to be its own lexicographer, in adopting a consistent usage of the terms “recess” and “facing” that is supported by the specification, which should have been reasonably interpreted in the context of the specification. The specification consistently adopts “recess” to refer to a concave section on the tip of the convex structure on a light guide plate, based on a reasonable interpretation, and within the context of the disclosure of the present invention. (See the disclosed embodiment shown in Fig. 5b of the disclosure of the present invention; the convex structure includes a recess within such structure.) This demonstrates that the recess structure is clear and consistently presented in the disclosure of the present invention, as a concave section of the convex protrusion, not as a through hole, as otherwise in the case of Kitamura.

Accordingly, even if Kitamura can somehow be combined with Harbers and Beeson, such combination does not obtain the present invention as defined by previously presented claim 31 (now claim 27 as amended), or claim 51 as amended.

Further, there is no reason to combine Kitamura to Harbers and Beeson in the first place. Kitamura is directed to back-lit light guide module, and Beeson is directed to edge-lit light guide plate. For similar reasons noted above, there is no teaching, suggestion, motivation or apparent reason which can be gleamed from Harbers, Beeson and Kitamura, or any other references for that matter, to modify the rear-lit light guide in Harbers to have prisms in Beeson, and then to further modify the Beeson prisms in such modified structure, to provide through-holes in the prisms! Even if such series of modifications can somehow be accomplished as proposed by the Examiner, it is unclear if such final structure would have practical utility.

Accordingly, suggestion of the prior art is missing in relation to the present invention. Absent such suggestion, there is nothing that could naturally flow from the prior art, but instead must require non-obvious inventive steps leading to the present invention. It appeared that the Examiner again relied upon cherry picked individual structures in the cited references to create the present invention based on impermissible hindsight reconstruction, completely disregarding the fact that the references themselves do not teach, suggest, motivate or provide an apparent reason for, and in fact teach or suggest against, the combination proposed by the Examiner.

Given the amendments to claims 27 and 51 merely incorporating the limitations of previously presented claim 31, should the Examiner reject the claim 27 as amended based on a new ground of rejection in the next action, such next action should not be made final, as the such new ground of rejection would not have been necessitated by the present amendment.



Given the patentability of amended independent claims 27 and 51, all the dependent claims are likewise patentable over Harbers, Beeson and Kitamura.

### CONCLUSION

In view of all the foregoing, Applicants respectfully submit that the claims pending in this application are patentable over the references of record and are in condition for allowance. Such action at an early date is earnestly solicited. **The Examiner is invited to call the undersigned representative to discuss any outstanding issues that may not have been adequately addressed in this response.**

Respectfully submitted,



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